

# *Virginia* WILDLIFE

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Photo courtesy V.S.C.C.

### *February Sky*

This dramatic photo of scraggly pines on the sand dunes off Virginia Beach represents some of the finest of pictorial work ever done in Virginia. This picture was made by the late H. C. Mann, a French photographer, and exposed on 8 x 10 glass negatives. These plates are now the property of the Virginia State Chamber of Commerce

# Virginia WILDLIFE

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond 13, Virginia

*A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting and Fishing in Virginia*

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## Cover

Harbinger of spring is Mr. Woodchuck. If his shadow shows on February 2 we can expect six more weeks of winter; if not, so the legend goes, we'll have an early spring

*Photo by Hal Harrison, National Audubon Society*

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# AMERICA

**I** LOVE thy rocks and rills, thy woods and templ'd hills." So runs one of our most popular natural songs.

I have seen Americans stand and sing "My Country 'Tis of Thee" with tears of emotion in their eyes and selfish exaltation in their bearing.

But I just don't believe it.

The more I see of our blasted rocks, dammed rills, cut and burned woods, and bulldozed hills the more convinced I am that the average American has no consideration for them whatsoever. Or if he does, he seems apathetically unmoved by the destruction around him.

We love wealth, prosperity, and growth. We take pride in a high standard of living. We thrill to automatic gadgets, deep freezers, and jet planes. We boast of a mechanical, electrical, atomic civilization wrapped up in a package labelled, "Liberty, Democracy, and the Pursuit of Happiness—Handle with Care." There may be a superstreamlined Frankenstein inside. But God bless America. We love it.

However, there is another America. It is under our feet. It is around us. It is the land we live on: the forests, hills, valleys, mountains, and deserts we took from the Indians.

Do we love this America too? Well, maybe. But it looks to me as if we were so dissatisfied with its general appearance and arrangement that we

are trying to change everything about it in the shortest possible time.

For, all over the country powerful interests, representing themselves as the majority, are closing in, bent on despoiling and obliterating every last vestige of original America. Although national parks preserve less than one percent of our land in primeval condition, giant dams are proposed for four of them, and lumbermen demand the finest forests in a fifth. National forests provide less than one percent of the nation's cattle-feed requirements, yet embattled stockmen are asking for the forests as their private preserve. Miners and sheepmen want the national monuments. State parks are succumbing to commercial interests. Marshes are drained, lakes emptied, and predators exterminated so that wildlife suffers from unbalance. Each year thousands are enlisted in the battle to preserve the resources and character of our country. But they are still woefully in the minority.

The front-line Minutemen of the Revolution fought at Lexington and Concord for the America they loved. Those historic patriots won against great odds. It can be done again. But don't wait for orders. Start firing Now! Join the present-day minutemen by thinking, talking, reading, and spreading the importance of CONSERVATION.

God bless America—and let's save some of it.

—WELDON F. HEALD in *The Living Wilderness*

## "As Ye Sow"

**L**IFE IS A game of "put" and "take"; a mild gamble with unknown and unforeseen hazards which may spell success or failure; and it is certain we shall take nothing worth-while out of it, unless we make a definite contribution on our own behalf.

What the sportsman continues to take from the wildlife field will depend upon what he is prepared to put into it. Conservation is a co-operative endeavor in which all must play their part. It is not a negative policy which prohibits take, for it is based primarily upon wise use, and it is this factor which necessitates co-operation. Game and fish are self-renewing resources, but unlimited take would ultimately destroy the power to reproduce. Protective laws and administrative policies are intended to forestall such a danger while restock-

ing is intended to secure the take at a more or less constant level.

The sportsman is expected to assist in keeping the pot replenished by making a personal contribution to the success of every conservation measure intended to guard his sport. He can do this by observing the laws himself and by making it less easy for others to break them; by co-operating with the enforcement officers to the same end; by avoiding waste and by restricting his take to his immediate personal needs, within the limits set by law. These are conservation measures of importance from the standpoint of those who love to spin the recreational top which represents the sports of fishing and hunting.

PUT—and—TAKE; for "As ye sow so shall ye reap!"

—By J. MACARTNEY, Courtesy SYLVA





*Photo by C. L. Broley from National Audubon Society*

## AESTHETIC and RECREATIONAL VALUES of WILDLIFE

By DR. HARRISON F. LEWIS

**T**HE MEANING and the success of life are dependent on its conscious or unconscious scale of values. For those who are at all concerned about the meaning of life, or about the meaning and success of their individual lives, the question of a scale of values is one to which earnest and careful consideration should be given, even though no two persons will or should reach quite the same answers.

Economic values are the kind by means of which people make a living. Since making a living is very important, it is clear that economic values are very important.

A large part of animate creation is concerned with little beyond making a living and reproducing its kind. Widespread among mankind, however, is the more or less conscious realization that making a living is only a preliminary; that beyond it lies, for those who will accept it, the greater experience of living a life.

Aesthetic and recreational values are primarily concerned with living a life. In one form or another, they are essential to real living. They upbuild the persons who assimilate them. Rightly used, they increase ability to perceive and to comprehend. In the long run, they are essential to the sound development of society.

In comparison with economic values they take no second place.

Aesthetic values are those that relate to beauty and to the capacity for appreciating and enjoying it. People with normally developed abilities recognize the prevalence of beauty in wildlife.

The current interest in wild birds owes much to their beauty. The bright colors of the scarlet tanager, the tasteful attire of the waxwing, the delicacy of the hummingbird, the graceful flight of the swallow, the grandeur of the eagle, the appealing music of the hermit thrush; all these forms of beauty and many more so satisfy our natural craving for that element that we cannot help but like birds.

Who does not delight in the admirable proportions and grace of a deer or a squirrel? Who does not admire the streamlined forms and bright patterns of trout and salmon?

There is not one among us that does not enjoy the beauty of the wildlife that he sees and hears and whose life is not enriched thereby. To our forebears such enjoyment was available every day. When the structures and schedules of this industrial age in which we find ourselves immersed cut us off from wildlife for a time, we dream of the happy day when we shall return to it and in the meantime make shift with starlings and sparrows.

\*Address delivered at the 16th North American Wildlife Conference sponsored by the Wildlife Management Institute. Dr. Lewis is former chief, Canadian Wildlife Service Department of Resources and Development, Ottawa, and one of America's foremost wildlife conservationists.



In these days of rapid communication and abundant publication we may obtain aesthetic values not only from wildlife at our windowsill or in our neighbourhood, but also from exotic forms in distant wildernesses. Books, illustrated magazines, motion pictures and travelled lecturers bring the world to our door. With the aid of well-regulated imagination we may enjoy vividly the aesthetic values of birds and beasts of all the continents and the isles of the sea, without immediate personal experience of them. Conversely, we may, by use of the same media, help many others to share the aesthetic values of the wildlife of our own region and may intensify, through widened experience and heightened understanding, their realization and enjoyment of those values.

Recreational values are closely akin to aesthetic values. These two categories may, indeed, overlap and fuse to some extent, but in connection with recreational values the idea of personal activity and participation is prominent.

Recreational values obtained from association with wildlife are of many different kinds. Pursuit of some of them, through such activities as observing wild creatures with the aid of binoculars and telescopes, taking photographs of birds and mammals, building up scientific collections of modest proportions, and engaging in scientific wildlife research, does no significant harm to wildlife stocks in general. It is, of course, desirable, and sometimes necessary, to observe reasonable rules and precautions. Tender young creatures should not be needlessly exposed to sun and storm by thoughtless intruders, intent on securing photographs or placing bird bands, and the remnants of rare species should not be wiped out or endangered in the name of science.

Recreational values are closely akin to aesthetic values, but with recreational values the idea of personal participation is prominent

Photo courtesy Virginia Conservation Commission



Pursuit of certain other recreational values obviously and inevitably takes a heavy toll of the wildlife on which those values are based. The sport of hunting, famed and popular for its value as a mode of recreation, cannot long continue without the taking of game; nor can the sport of angling, which is an even more general and widespread means of recreation, long retain the support and interest of its devotees without the taking of fish. If these great sports, these kinds of pursuit of recreational values based on wildlife, were carried on without adequate controls, they might be excessively destructive. Given a large and increasing human population, dwindling wildlife habitat, rapid and increasingly efficient and widespread transportation systems, and cheap and effective equipment for killing wildlife, all of which conditions are general on this continent today, it is evident that without controls well devised and firmly applied hunting and angling could readily destroy the wildlife stocks that made their development possible and that are necessary for their continuance.

As you all know, we have those controls. To a large extent they take the form of public laws and regulations, authorized by appropriate agencies and applied by staffs of officers in the public employ. In the democratic countries that occupy this continent these laws, regulations and officers are the mechanism through which the public controls itself, in order to ensure continued acquisition of wildlife values of recreational and other kinds and to distribute those values as equitably as possible.

Essential though these public controls are, they are insufficient, at least in our type of society, to bring about the results sought. *They must be supplemented by control of another kind, the control that individual hunters and anglers must exercise over themselves.* What law can

Aesthetic values are those that relate to beauty and to the capacity for appreciating and enjoying it

Photo courtesy V.S.C.C.







*Commission photo by Kesteloo*

The current interest in wild birds owes much to their beauty. In satisfying our natural craving for that element we cannot help but like birds

make hunters hold their fire until game is within effective range? What law can make them do their best to secure every cripple and count it as part of their bag? What law can make anglers handle undersized fish so carefully that they will live and thrive when released? These matters and others like them call for intelligent self-restraint on the part of sportsmen interested in ensuring the continuance of the recreational and other values obtained from the wildlife that they seek.

Fortunately, there is increasing realization, not only that public and private controls are necessary for continuing the acquisition of values based on wildlife, but that the inter-locking network of controls must, as a whole, be sufficient to prevent the annual take of wildlife from exceeding the annual net production. To attain this end under the severe and changing conditions of our time requires great and increasing care, precision and skill. The most numerous, accurate and reliable data that can be obtained for guidance are by no means excessive; the most skilful scientific use of those data is no more than is needed. Only as all concerned, the individual sportsmen, the private organizations, and the public agencies, co-operate closely and energetically can success be attained.

Aesthetic and recreational values derived from wildlife appear very varied. Some people prefer angling; others, hunting; and yet others, photography or mere association and observation. Each of these groups may again be subdivided many times. Anglers, for example, may be classified according to the kind of fish they prefer, as bass fishermen, trout fishermen, salmon anglers, and so on; or according to the type of water in which they prefer to angle, whether lakes, streams, surf or the open sea; or according to their favorite equip-



*Photo from H. Armstrong Roberts*

Appreciation of native wild flowers and flowering shrubs, such as this dogwood, is exemplified by the formation of garden and wild flower clubs, committed to the protection of plant life

ment, be it dry fly, wet fly, lure or bait. Each combination of fish, water and equipment presumably yields values somewhat different from those to be obtained from any other combination. Yet all may be reduced to two principal categories: personal pleasure and heightened ability to see environment with understanding. Unhappily, many people, in this field as in others, are reluctant to understand better, for fear better understanding will disturb them.

The kinds of wildlife on which recreation or aesthetic enjoyment may be based are also very varied. This is our good fortune, for the greater the variety of existing wildlife, the greater its capacity to provide opportunities for obtaining aesthetic and recreational values.

All existing kinds of wildlife have therefore a place and are capable of adding to the aesthetic and recreational values by which mankind is benefited. The optimum value of each wild species for this purpose must be determined with reference to its place in the general scheme, or, in other words, be fixed in consequence of ecological considerations. That optimum may be defined as the quantity of the species concerned that, at a given time and place, makes for the healthiest and the best balanced community. A community, as Leopold pointed out, includes not only people, but also soils, waters, plants and animals of all kinds.

When wildlife forms are exterminated or otherwise rendered unavailable, some opportunities for obtaining aesthetic and recreational values are lost. Thereby our lives are sensibly impoverished. All perceiving and understanding persons and all agencies concerned with the welfare and development of mankind have a responsibility for maintenance of adequate stocks of all wildlife forms and a part to play in that maintenance.



I NEVER THOUGHT much about hunting leopards until I went to India. There, where much of the animal life is considered sacred—even the products of animals—wildlife exists in great abundance and the spotted big cats are no exception.

When leopards began raiding the cattle farms just outside of the city of Hyderabad, no small metropolis as cities go in India, I began reading up on these animals. According to one authority, the leopard is one of the most ferocious of the cats, being dangerous even to man. Though not as prone to man-eating as a renegade tiger, he is known to be a serious antagonist and to do his share of man-mauling. The late, well-known African explorer, Carl Akeley, had a personal encounter with a leopard which nearly killed him. It was only because of a clear head and superhuman effort that Akeley, unarmed, managed to choke the creature to death. His wounds were so bad however, that infection set in and he died.

My interest in leopards continued to be aroused through the reading of Jim Corbett's books and I was determined to try this sport when opportunity permitted. I thought no more about it for a while until I ran into Tex, another hunting enthusiast. Yes, Tex was from Texas, and characteristic of his kind, given to a little exaggeration.

"Shoot? Why, I'm the best shot in Texas," he boasted. "Why, I can shoot the whiskers off a Texas gnat at fifty paces. Of course, it's a little hard to do with my eyes shut and when gnats are thick because you sort of have to pick them out by their hum. And, brother, them humming gnats are thick in Texas."

When I mentioned leopards to Tex, he got all excited. Yes, he'd go in a minute. All I had to do was to arrange a hunt.

In India, most hunting is done on private estates and on invitation of some rich landowner, or maharajah. On occasions, however, small parties get together and arrange "shoots" of their own. These may be one, two, or three day jaunts into the field, or night shooting using spotlights, without the fanfare of an organized big "shoot."

It was on such a hunt that I had one of my most thrilling hunting experiences. Tex and I bragged so much about our respective states back home and about our shooting dexterity that we had to quit talking and go out and shoot or shut up. So we finally arranged a little "shikar," the Indian name for a hunt. Louise, my wife, decided to go along. I'm not sure whether it was to chaperone me or simply to keep me from lying when we returned. There were six in the party: An Indian huntsman or "shikari," a helper, Dr. Ahmad Shah of the Indian agriculture department, Tex, Louise and I.

Dr. Shah got us all together one bright, blue, cloudless afternoon in June. We set out by jeep and station wagon for the desert country about 15 miles from Hyderabad, a city of approximately 400,000. We reached our destination at 4:00 P. M., parked the cars,

# Virginian on Indian Leopard Hunt

By J. E. OGLESBY

*Photos courtesy the Author*

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*Editor's note:* The author of this article is supervisor of the Film Production Service, Virginia Department of Education, Richmond. He has just returned from India where he served as film officer in the Foreign Service of America with assignment to the American Consulate in Bombay, India. Mr. Oglesby took leave of absence from his present position in order to participate in the India informational program. This was done upon the invitation of the U. S. State Department.

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and began talking to a local villager who, excited, recounted the story of how two nights previously a leopard had killed one of his bullocks. The big cat had somehow gotten around him and his family, and in spite of the fact that they were sleeping outside of the bullock pen, the leopard got around and made a killing.

Aided by unusual Indian gestures on the part of other villagers, and with interpretation from Dr. Shah, I pieced together the story. It appeared that screams from the killing woke the family and they, frightened, dashed away. They hadn't rested since. They were so upset over the incident that they begged us to protect his other cows and to go out and kill the leopards.

While we talked with the villagers, our shikari went out scouting into a likely-looking rocky place about a quarter-mile away. Finding signs, he built a rough

Site of the leopard hunt in the arid plain country of India. Note rocky outcrop on ridge in background where leopards were sighted





"machan" or blind on the ground in the open, screening it with brush.

Thirty minutes later our huntsman returned and said that all was well, whereupon all six of us marched single file and in dead silence into the rudely constructed machan. Generally, a machan is built in a tree when trees are in the vicinity, but this one was built in the open area and roughly 300 yards from where the shikari had reported seeing two panthers.

The natives call all leopards panthers, although this is not quite correct. The spotted leopard, which we were hunting, is confined to Asia and Africa, while its cousin, the black panther, is only found in the Malayan Archipelago and in sub-tropical coastal Asia.

For a decoy or leopard bait, we had along a medium sized "pi" dog, the name given a mongrel dog, which the shikari promptly chained to a stake 50 feet in front of the machan and in a southerly direction toward the rocky outcrops beyond. A wire was attached to the dog's leg and led back to our blind, which the shikari could yank at now and then to make the dog yell. The object, I learned later, was to make the dog mad enough to howl, even to make the blood run, so that this would attract the roving leopards hidden among the ledges.

There was little view of the rocks ahead and we had to push the brush of our machan apart to see out. Two lower holes in the blind allowed us to see the dog bait.

We had been in the machan less than 15 minutes when the dog suddenly laid down. At once the shikari gave a vicious jerk on the wire, sending the dog reeling over and yelping. Then I saw a flash. Something moved among the rocks. Suddenly, to my amazement, there appeared on the scene not one panther, but four! One big fellow emerged slowly out of a large cave and gazed around. He looked big as a tiger—beautiful, lithe, powerful and almost unreal. All of us took turns to look at him, but the distance was too great for a shot.

The dog kept up his wailing and I was sorry to see the shikari jerking on the wire. Then the dog stopped yelping and the leopards slinked from view. All became quiet again.

The wife and I pose with the Indian party at the scene of the leopard hunt. Children and men in foreground are a group of villagers who gathered around after the hunt



A few minutes later I glanced at my watch. It was 5:00 P. M. Something should happen soon, I thought. Then a glance through an opening revealed our dog bait. He looked dead. Suddenly out of the corner of my eye, I caught a movement hardly 20 feet from the dog. Then I saw it! I could not believe my eyes. But there he was, so breath-takingly close that my heart felt like it would come through my ears. How that leopard could have crept so close to us without our seeing or hearing it was a mystery to me. But there he crept and only a few yards from the dog, ready for the death pounce.

By previous arrangement, Tex and I matched coins to see who would shoot first. He won. When we spied the leopard, Tex raised his 30-06 Springfield and levelled off. The leopard now seemed only a few feet from the dog. The dog lay dead from fright. At the crash of the gun the leopard let out an agonizing scream, leaped about 10 feet into the air, whirled, charged in our direction, and dropped 15 feet in front of our machan. He struggled furiously for a few seconds, thrashed around, then stiffened without another sound. He was hit square in the front right shoulder just where the shikari had said all panthers should be hit.

Well, by this time I was so nervous I could not get up. We were sitting on rocks in the machan and I had never felt so terror-stricken in my life. When I first spotted the leopard, I thought he would go 500 pounds, but after we had pulled ourselves together and ventured out, we saw that he was only a half-grown cub. I estimated him to be roughly 150 pounds.

The shikari quieted us down quickly, then dragged the dead beast into the machan with us. We took our places in the machan again and waited. During the excitement we forgot all about the little "pi" dog. It wasn't until I saw the shikari give another yank on the wire that I realized the dog wasn't dead. He had only played dead. Apparently when the leopard approached, he became so paralyzed with fear that he passed out.

After this the action slowed down. It was simply a matter of waiting and jerking the wire and looking out for leopards. We dared not talk, smoke, or even move. Only perfect stillness, the shikari said, would give us a chance at the other leopards. Darkness finally overcame us.

Around 9:00 P. M., after we had become numb from sitting so long, all hell seemed to break loose. It was as if the entire black desert suddenly became alive with growling leopards. Blood-curdling cries roared from every direction. Some screams sounded only a stone's throw away. Louise grabbed me tightly, but I wasn't much support because I was trembling like a leaf. From the commotion that was going on, we reasoned that several old panthers had left their rocky lair and were seeking out their half-grown cub which we had killed. They, together with several other panthers, had circled the hill and had now ventured out near us on the windward side. We did not know, of course, whether the beasts would attack our machan, make for

(Continued on page 21)





Commission photos by Kesteloo

Many kinds of wildlife that live in the woodland are found nowhere else. When the woodland is burned, these creatures become fewer or disappear. To protect wild things, we first of all must protect their homes



**S**MALL WOODLANDS are natural homes for such valuable fur bearers as the skunk, opossum, mink, raccoon, fox, and weasel. Among game animals, woodlands harbor squirrels of various kinds, woodcock, ruffed grouse, rabbit, and snipe. Fox and raccoon provide sport as well as pelts. In the woods also live flying squirrels, chipmunks, pocket gophers, mice, and other forest rodents. Song and insect-eating birds are abundant—the thrushes, warblers, woodpeckers, and nuthatches, kinglets, and whippoorwills. Predators, hawks and owls, live in the woods and feed upon insects, snakes, frogs, and small vertebrates.

Many kinds of wildlife that live in woodlands are

\*This very enlightening article first appeared in the 1949 Yearbook of Agriculture, *Trees*, and is reprinted here by special permission of the author. Dr. Graham is assistant chief, U. S. Soil Conservation Service, Washington, D. C.

## Wildlife in the

found nowhere else. When the woodland is harmed or destroyed, these creatures become fewer or disappear. To protect the useful and beautiful wild things of the woodlands, we must first protect their woodland homes, where they get food, shelter, a place to breed and hide and live.

The things to do to help woodland wildlife are much the same as the rules to be followed in growing the trees, for when trees are protected they make homes for wild animals.

The rules for the management of the woodland wildlife are: Protect the woodland from uncontrolled fire, protect the woodland from intensive grazing, cut the trees selectively, preserve den trees, develop woodland borders.

Wildlife usually benefits most when fire is kept out of the woodland. In the few instances in which fire is employed as a tool in forest management, it must be carefully supervised. Reckless burning destroys cover that is used by wildlife for nesting, escape from enemies, roosting, and other purposes vital to their survival. Uncontrolled fire also reduces the food supply of wildlife and may burn them to death as well. After a serious fire it may take years for the woodland trees to recover and as long to recreate the proper habitat for the birds and mammals.

The woodland that is subjected to intensive grazing





*Commission staff photos*

Rules for the management of woodland wildlife are: Protect the woods from uncontrolled fire, cut trees selectively, protect woods from intensive grazing and browsing, and conserve wildlife by protecting its home

## Small Woodland\*

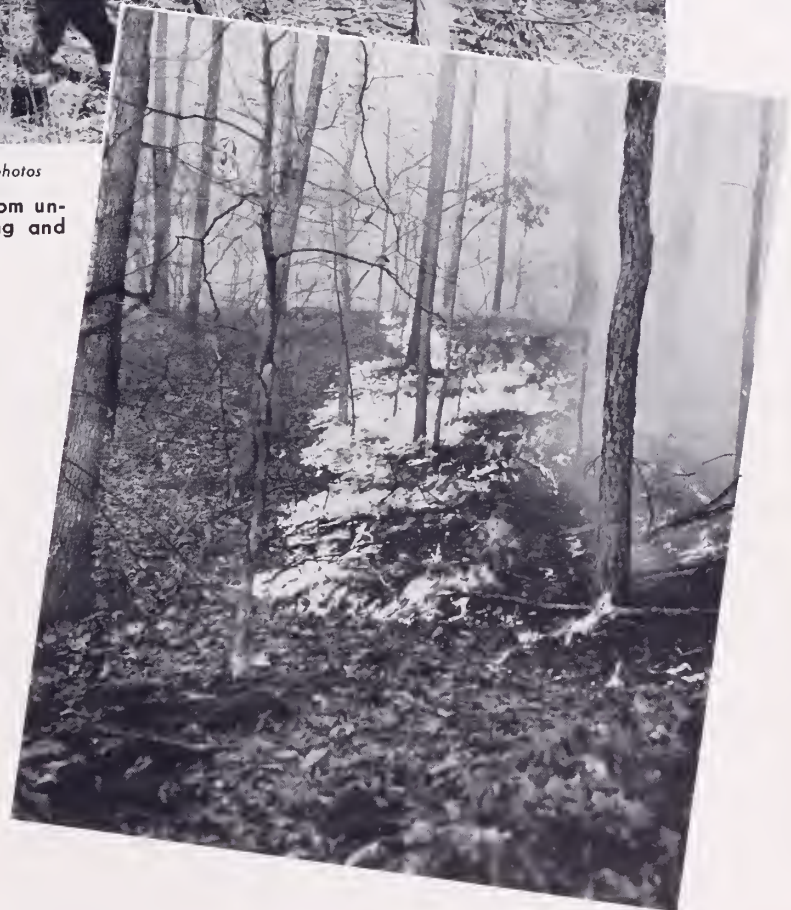
By EDWARD H. GRAHAM

is usually a poor place for wildlife. Constant trampling and disturbance by cows, sheep, goats, or horses is especially damaging to wild animals that live on or near the ground. Severe grazing, which destroys young trees, affects the existing conditions and the future conditions under which the wildlings live.

Studies by Charles A. Dambach in Ohio disclosed that eastern woodlands that are protected from grazing have twice as many species and numbers of plants as grazed woodlands. Under protected conditions are found about twice as many kinds of birds that nest on or near the ground and nearly twice as many kinds of mammals than are found in comparable woods that are grazed.

Harvesting trees as they mature here and there throughout the woods instead of cutting the whole lot at one time is especially valuable to wildlife.

An even-aged stand of trees has less variety of wild birds and mammals than a woodland that has a mixture of mature and young trees. The more variety in the habitat, the more variety in the wildlife it supports. Furthermore, openings where trees are felled are especially valuable to certain kinds of wild creatures. In them there is a variety of herbaceous and shrubby species along with young trees, and such spots make the woodland more desirable for grouse, rabbits, and other living things.



*U. S. Forest Service photo*

Some of the most useful, interesting, and valuable animals of woodlands are missing when there are no trees with hollow trunks or hollow limbs. For some kinds of wildlife, a hollow tree is essential. The raccoon, for instance, is rarely found where there is not a hollow tree for a den. Another fur bearer, the opossum, also holes up in hollow trees. Flying squirrels use the holes for homes, and so do other squirrels, the wood duck, screech owl, sparrow hawk, chipmunk, nuthatch, crested flycatcher, chickadee, bluebird, purple martin, and chimney swift.

In Europe, the foresters found that the woodlands composed of even-aged stands of a single tree species supported practically no wildlife. Injurious insects were also abundant. So much damage was done by



forest insects that nest boxes were finally set up to attract birds. The birds fed upon and helped to control the harmful insects. Woodlands that compose a natural community of living things give us less trouble than artificial plantings. A few scattered den trees help a great deal toward maintaining a natural balance in our small woodlands. They are especially valuable near streams or near the margins of the woodland.

At the outer margin of the small woods, where it adjoins a field or pasture, a border of shrubs is especially valuable to wildlife. It is a principle of wildlife management that there are more wild creatures in the edge of a particular type of vegetation than within the type. Counts of birds and mammals show more species, and more individuals, along the shrubby margin of a woodland than within the woodland or in the adjacent pasture or field. Protecting the woodland edge thus increases wildlife. Often fruit—and seedbearing shrubs grow there naturally.

A simple method of producing shrub borders is to cut the trees within 20 to 30 feet of the woodland edge. Certain kinds of shrubs and other materials can be planted successfully along the margins of woodlands to improve them for wildlife.

The most valuable for the Eastern States are: Bicolor lespedeza (*Lespedeza bicolor*), bayberry (*Myrica carolinensis*), hazelnut or American filbert (*Corylus americana*), flowering dogwood (*Cornus florida*), highbush cranberry or American cranberry bush (*Viburnum trilobum*), the silky cornel or the silky dogwood (*Cornus amomum*), and the Tatarian honeysuckle (*Lonicera tatarica*.)

For the Western States: Squawbush or skunkbush (*Rhus trilobata*), American Plum (*Prunus americana*), chokecherry (*Prunus demissa*), the buffaloberry (*Shepherdia argentea*), tamarisk (*Tamarix gallica*), and Russian-olive (*Elaeagnus angustifolia*.)

Nurserymen will be able to suggest other shrubs and trees that are adapted to one's own locality, that can fill a double or triple purpose in woodland or, indeed, on any country place, and that have fruits that are especially appealing to the particular birds a person might want to attract. Among the suggestions might be red cedar (*Juniperus virginiana*) that is relished by more than 50 species of birds, including the bobwhite, pheasant, and the mourning dove; the sumacs, whose berries attract more than 100 birds and mammals; the elderberry, food for more than 100 birds; and snowberry, eaten by 30 species of birds.

Such shrubs need not be costly, especially if one buys them in small sizes. They are not hard to plant and care for. Or, another suggestion is that neighbors exchange cuttings, slips, or roots of shrubs. What better project can neighbors or communities or organizations—better in the enhancement of friendship, beauty, and money values—carry out than one in which groups of persons buy and exchange shrubs for woodlands, roadsides, waste places, parks?

The precepts given here will assure an abundance of wild creatures in the small woodland. The woodland

wildlife has many values. It is interesting and attractive. It provides sport in the way of hunting. It yields a crop of fur bearer pelts that brings cash to the landowner. Wild creatures provide a service that we often fail to appreciate because it is not obvious—they contribute to the natural balance that helps keep woodlands in condition.

A few examples illustrate this important contribution by wildlife. In northeastern forests, small mammals occur in remarkably large numbers. Studies by W. J. Hamilton, Jr., and David B. Cook show that these animals number about 100 to the acre. They eat an astonishing number of insects. Forest rodents—mice, chipmunks, and flying squirrels—have a diet that is 20 percent insects, even though they are considered to be primarily plant feeders. The food of the woodland shrews and moles runs from 50 to 75 percent insects. The insect-destroying value of such woodland mammals is high also because they are voracious creatures, many of them eating each day enough food to equal nearly one-third of their weight. Unlike most birds, they are resident creatures and are more or less active throughout the year.

In the Western States, the pandora moth attacks Jeffrey and ponderosa pines, and under some conditions it injures lodgepole pine. A large-scale attack was made upon lodgepole pine in 1937 in north-central Colorado. How much more severe the damage from the infestation might have been if wildlife had been absent is indicated by an investigation of the situation by N. D. Wygant. He found that "squirrels and bears were destroying many of the pupae . . . Bears had overturned many flat stones and the squirrels had dug cone-shaped holes in the ground in search of pupae and . . . Animal feces composed almost entirely of pandora moth eggs were found."

The value of birds in woodlands has been evident since the Department of Agriculture began its research on the food of wild animals of farm lands some 50 years ago. A large amount of food is consumed by birds, and injurious insects are among the items that compose the diet of many species. Investigators have found 5,000 ants in the stomach of a flicker, a nighthawk with a stomachful of 500 mosquitoes, and a yellow-billed cuckoo that had consumed 250 tent caterpillars.

Wildlife is a natural part of the small woodland. It belongs there just as the trees themselves, the duff on the woodland floor, and the rich soil beneath the trees. Without wildlife the small woodland is a poor place; with wildlife the small woodland is a better place for the trees, and a more productive, useful, and attractive place for people.

EDWARD H. GRAHAM is chief of the Biology Division of the Soil Conservation Service. Before he joined the Department in 1937, Dr. Graham was for years engaged in botanical studies for the Carnegie Museum in Pittsburgh. He has written many scientific and technical papers on plant sciences and wildlife ecology, and is the author of several books, among them a treatise on the application of biological principles to the management of land, *Natural Principles of Land Use*.





*Commission photo by Kesteloo*

The new smallmouth bass hatchery, located in Smyth County, will be completed by spring, at which time smallmouth output will be doubled

# Commission's Fish Program Moves Ahead

By G. W. BULLER  
*Chief, Fish Division*

**W**ITH THE coming of spring the Commission's fish division will have completed a period of great expansion in fish propagation facilities and of new fishing waters open to the public in Virginia.

## New Smallmouth Hatchery Completion

This spring the finishing touches will be put on the new smallmouth bass hatchery in Smyth County, which upon completion will more than double the annual production of smallmouth bass for stocking purposes. Along with the increase in the numbers of bass, the production of longear sunfish and rock bass will also be doubled.

Although the new Smyth County hatchery, newly named the Buller Hatchery, will not be completed until this spring, it already has contributed some 22,500 smallmouth bass, 12,000 rock bass and 29,500 longear sunfish to the state's fishing waters. These numbers were in addition to the 118,100 smallmouth bass and 137,800 sunfish stocked by the Commission's fish personnel in western counties from the Front Royal smallmouth bass hatchery during the fall of 1952 through February 1 of this year when bass stocking was completed.

Upon the completion of the Buller Hatchery, it is planned to hold-over 75 per cent of its smallmouth bass production until the second year of growth is completed, thereby providing a large number of real lunkers for smallmouth fishing addicts.

Smallmouth bass are stocked in the western counties of Virginia only. The records show that 40 rivers in 32 counties west of the Blue Ridge received their pro rata of smallmouth bass, rock bass and longear sunfish.

## Largemouth Bass Production

With the completion of the bass stocking program

February 1, a total of 105,000 largemouth bass were stocked from the Commission's big largemouth bass hatchery at Stevensville in waters east of the Blue Ridge, 70,000 of which averaged better than one pound per fish. These largemouth bass, along with 38,000 crappie and 106,000 bream were stocked in 93 ponds and 58 rivers from 44 eastern counties and 2 cities.

Before we leave the fish stocking program, it may be well to discuss briefly some of the things taken into consideration before placing the various species of fish in particular bodies of water. Foremost among these considerations is biological reasoning. In other words, are the waters suitable for the particular type of fish to survive and reproduce? Secondly, the people's choice or preference. This means that where crappie, bream and longear sunfish are all equally adaptable to particular waters, the people's preference rules. For instance, in the southwest Virginia fishermen tend to favor the longear sunfish over bream and crappie and, therefore, if the waters are suitable for all three species the longear is stocked. Ordinarily, bream are stocked in waters in which bass are not usually adaptable, but in which people like to catch fish. Many times, of course, the bream is stocked with the largemouth bass to enhance the fishing and to serve as food for it.

## New Public Fishing Waters

By early spring the Commission will have completed construction of the 80-acre public fishing pond located in Pittsylvania County. The new pond will not be stocked, however, until this fall, at which time it will be generously planted with largemouth bass and bluegill bream.





Like homes for people, a good birdhouse begins with a plan. A wide variety are available from many sources



Instructions are simple—show construction, step by step. Requirements differ with bird species



Dust in your eye! Sanding wood for smoothness is a little messy but the results are worth it



Painting is an important step in house and feeder construction. Use a good grade of outside paint and touch up all exposed surfaces

*A bird conservationist shows how . . . .*

## Spare moments can aid wild

You, too, can turn your leisure hours into a v  
Winter days especially lend themselves to building

Here James B. Bourne, a bank president of S  
duction style. In over 40 years of birdhouse build  
bird homes and much seed, making many boys and

*Commission ph*

Wood duck nesting box—simple to build, inexpensive, a boon to our most beautiful duck. Note hinged top to aid cleanout







Actual construction begins with assembly of material. Well seasoned softwoods are easiest to work with



Machine tools make work simpler, faster. Here our demonstrator shows how it's done on a jigsaw



One bird feeder coming up! Note plates of glass on right which when assembled, will hold seed in place

When you get good, try your hand at one of the more unusual forms such as this log cabin house



Or go exotic and turn out an intricate Japanese model. It all adds up to the same thing—more pleasure for you and your bird friends



# Virginia's BLACK BEAR-- Good or Bad?

By E. V. RICHARDS

*Commission photos by Kesteloo*

**R**ED-COATED HUNTERS were tightly grouped about the fire. It was a cold opening day! These men were taking a break from their favorite deer stands and welcomed the cherry warmth of the fire. They would try it again soon.

Being in the North River section of Augusta County, they talked as all big-game hunters do. One said, "I've read where a black bear in these mountains is worth 5,000 dollars to the State, when you figure the money hunters spend on guns, ammunition, food and gas, just to kill one."

"Reckon that's about right," said another. "I hunt bear—done it all my life—keep three or four hounds all the time," he went on, "must spend 200 dollars on them alone when you figure feed, licenses and all."

A big red-faced fellow with torn jacket moved closer to the fire, spreading his hands over it to soak up the heat. He waited and listened to the others. Finally he broke in, "Try living in Highland County, like I do, and raise sheep with a killer-bear in the woods. Lose two or three ewes a night like I did this summer," he went on angrily. "I say the bear ain't worth nothing and should be run out of the mountains," he added as he threw a small branch on the fire.

There you have the problem of the black bear in mountainous Virginia. The good and bad sides of the bear are summed up in the arguments of these hunters. The question is, where to draw the line? Let bear hunters have more sport or listen to the sheep raiser who has to live with a stock-killing bear?

In managing the bear in western Virginia, the Game Commission has to listen to both sides and is doing something about it.

In sheep country, the county wardens investigate all damage caused by marauding bear. Often, the warden will organize hunts on the spot with local hunters and dogs co-operating in tracking down the guilty animal.

On national forest land, the Commission through its co-operative wildlife management work carries out a long range habitat improvement program. Efforts are made



Black bear are now found in about 15 counties in western Virginia and in the Dismal Swamp area in the east

to increase black bear range. Whenever hunting values for bear exceed the occasional damage to livestock, your Game Commission, through the resident game managers, endeavors to improve the habitat for this big game animal. Watering holes or "bear-wallows" are created around natural springs. Food and shrubs are planted, pruned and maintained for wildlife on 6,000 forest clearings. Suitable den trees for bear are located and protected from logging. In this manner, bear are kept under control where necessary and are protected and allowed to increase to afford good hunting in the wilder areas.

Bear are now found in about 15 counties in western Virginia and in the Dismal Swamp area. Once the black bear roamed statewide, but man and civilization have driven it from much of its original range, so that it now inhabits only the roughest mountainous terrain and the tangled wilderness of the Dismal Swamp.

Each season several large bear are killed. In November 1951, a 400-pound bear was killed by Irvin Shifflet, of McGaheysville, Virginia. Walt Anson, of Ohio, killed a 381-pound bruin last fall. Both animals were killed on the Massanutten Mountain in Rockingham County. In June of this year, Brown Deputy, owner of a camp on the edge of the Big Levels Refuge, killed a 460-pound renegade male black bear that had been damaging his camp and other property. This animal was killed in the act of breaking into Deputy's cabin.

Adult bears in Virginia normally weigh from 200 to 400 pounds, but occasionally animals of 500 or more are recorded. Probably the largest bear ever killed in Virginia was killed in November 1944, by W. N. Halderman of Hampton, Virginia. Halderman, while hunting



in the Dismal Swamp, killed a bear that was so huge it could not be rolled over by two men. Since it was impossible to move this bear from the swamp, the head was carried out. From the skull, which measured 31 inches in circumference and 8½ inches between the ears, it was estimated that this bear weighed about 700 pounds. It is believed to have been the largest black bear killed in eastern North America.

The feeding habits of bear are interesting. Their principle foods are berries, acorns, nuts and fruits of all sorts. Often a bear will have a sweet tooth and will raid a bee hive. Sometimes he will eat green corn on the stalk or will climb cherry or apples trees, stripping and breaking branches as he climbs. Frogs, insects, small mammals, birds and carrion are eaten when available. Deer bones and hair found in bear stomachs indicate that an occasional fawn or weak deer may be caught. Most deer eaten by bear, however, died from other reasons. Several observations of bear feeding on the carcass of another bear have been reported in Virginia.

Many times a bear will acquire the habit of eating stock. Mutton is the most preferred food, but pigs, goats and calves have been reported killed in Virginia. Reports of stock-killing bear have been kept by game wardens over a period of years and in no case does the writer know of a female bear killing stock. In all cases it is a male bear, very often in poor condition and showing some age.

When a bear kills a sheep the victim is dragged or carried into the brush before the bear settles down for its meal. It may sometimes eat a portion of the sheep, cover it with leaves and return to it later. Often a bear will return to the same flock of sheep for another victim after a few nights. This habit is often the undoing of the stock-killer. Trained bear dogs are often used to track down the renegade animal by picking up the trail from the scene of the kill. Steel traps also are used to trap bear returning for another meal.

There are several counties in Virginia that require every big game hunter to buy a county bear-deer damage stamp. The price of this stamp is usually one dollar.



The old-time bear trap made of heavy logs, baited with honey, meat or apples has accounted for many curious bear. The author (Right) is shown inspecting the remains of one of these traps

Its purpose is to return to the county funds for the payment of damage claims. If a farmer suffers crop damage due to deer or bear or has livestock killed by a renegade bear he can submit a claim of his damages to the county and receive payment. Bath, Botetourt, Buchanan, Highland, Rockbridge, and Wise Counties pay damage claims. For example, Bath County received \$27,886 in receipts from the sale of damage stamps to hunters for the period of 1942 through 1949. During that same time a total of \$12,510 was paid to landowners suffering crop or property damage due to bear or deer.

Bear hunting west of the Blue Ridge is done with trained bear dogs. These dogs bred for rugged hunting are the pride of the bear hunter. Most of these dogs have hound bloodlines, and even some Airedale, plott-hound and bloodhound may be crossed with them.

On a typical bear hunt in the Briery Branch section of Augusta and Rockingham Counties, famous for its bear hunting, hunting is done by organized clubs. The hunt is usually led by an old experienced bear hunter, whose family represents generations of bear hunters. Sometimes 50 hunters and as many dogs go on a hunt. The area of the hunt is selected and the hounds are taken to mountain ridges or other places that bear are known to frequent. Meanwhile, the hunters take up "stands" along trails, ridges, hollows or any well-known bear crossing. These crossings are important and have been selected by keen observation. Finally the dogs pick up a trail and are off with loud baying. Several bears may be started during one hunt. The echoing of hounds running through the mountains is the most beautiful music in the world to fall on the ears of a true bear hunter. The chase may continue for miles up ridges, down hollows and up ridges again. The bear may be treed by the dogs or decide to make a stand and fight. Often the bear is shot by the drivers who follow the dogs through the mountains. Most bear are driven past a "bear stand" and are shot by the waiting hunter.

Hunting bear is done with either rifle or shotgun. Many bear hunters swear by the old double-barrel loaded with buckshot. After a bear is killed it is divided into portions for all taking part in the hunt. The hide may be given to the hunter who made the kill or sold to one of the hunters who desires a trophy. All such money usually goes to the owner of the dogs for the food and upkeep of the hounds.

Some local legendary bear hunters are still living. Such men as C. O. Howdyshell, Walt Allman, Winfield McDorman and Roy Hodge can boast of killing 20 to 40 bears in their lifetime. There are many others with equal records.

Some old bear traps can still be found in the mountains of Virginia. Old traps made of heavy logs, baited with honey, meat or apples have accounted for many a curious bear. Steel traps are seldom used any more to catch bear, since they could also be a man-trap.

The number of black bear killed in Virginia fluctuates

*Continued on page 21*



# WOODLAND MOSSES

By PAUL M. PATTERSON

*Photos courtesy the Author*

**T**HERE IS A LURE about the forest. We enjoy the vistas of the mountain tops, the plains and the beaches, but the richly shaded forests with their stately trees, and the graceful green plants on every side have an especial attraction. Here mother nature has reserved some of her finest treasures for display. Often prominent in this show are the many mats and cushions of mosses whose varying shades of green make intricate and interesting decorations on boulders, cliffs, stumps, logs, and tree trunks, as well as on the soil of the forest floor, and on the banks of streams. Indeed, mosses may be called the interior decoration of the forest.

Since the term moss is used for plants other than those we are discussing here, let us define mosses first by excluding those that are not true mosses. The reindeer moss, which is a branched, wiry grayish-white plant of a low dense growth commonly seen on soil and boulders, is a lichen. There are a number of lichens which resemble mosses to some extent, but they are leafless structures belonging to a totally different group of plants. A red alga used to thicken soups is known as Irish moss but of course is not at all related to true mosses. When we buy Christmas wreaths on the market, they are often woven out of little evergreen plants which we call the club-moss. Again, these are not true mosses, but are small modern relics of ancient forest trees that were prominent in the formation of coal. However, some of their relatives, the "little club-mosses" are about the size of the true mosses and resemble them superficially, but are easily distinguished by their more complex structures which mosses do not possess. Further, there are a number of flowering plants which, due to their compact growth or small size, are

called mosses. Take, for example, the delicate, graceful, Florida moss that hangs in grayish festoons chiefly from live oaks which grows on the southeastern Atlantic seaboard. This is not a true moss but a flowering plant related to the pineapple. You can think of other examples among flowering plants such as the mossy stonecrop, the moss pink, the moss rose, the mossy-cup oak, or the moss campion.

True mosses and their relatives, the hepatics, are a very distinct group, sharply marked off from all other types of plants. They differ from ferns and seed plants by having a much simpler internal structure. In the second place, they never produce flowers or seeds. However, their most striking feature is that they display a curious union of two conspicuously different stages or generations where one is always parasitic upon the other. The independent stage is either a leafy plant or one with the form of a green ribbon. This stage reproduces sexually, and the offspring which arise are entirely different as they are sexless, unbranched, leafless, and parasitic upon the independent plant. The parasitic generation has a terminal capsule where powdery particles called spores are produced which are too small to be seen individually without a high magnifying lens. When liberated, the spores are distributed by air currents and germinate under moist conditions, but curiously not into plants of their own likeness, but into the independent sexual plants. Figures 1 and 2 show the relationship of these two stages; together they constitute the complete moss plant.

The mosses and hepatics are known collectively as bryophytes, a name logically derived from the two Greek words which mean literally, "moss plant." Mosses are composed of three distinct groups, two of which are peat mosses, and the true mosses. Many of you have

Fig. 1. A complete moss plant. Below, is the leafless parasitic stage, growing upon the leafy plant

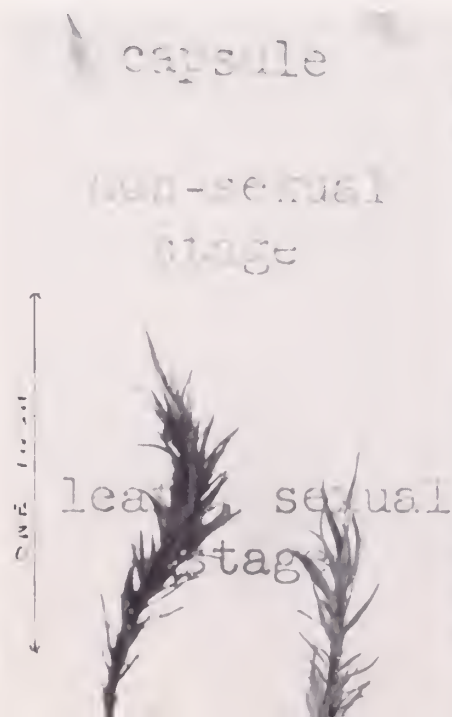


Fig. 2. A branched moss showing non-sexual generations growing from different branches



Fig. 3. A leafy liverwort. Plants are growing forward and decaying behind

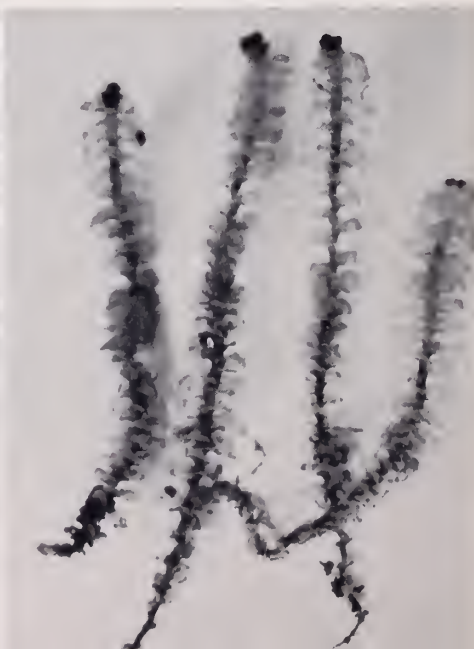






Fig. 4. Another ribbon-shaped hepatic. Note whitish stalks bearing black capsules. This is the non-sexual stage in the liverwort



Fig. 5. A mat of moss on a boulder has made it possible for the spiny shield fern to make a good growth



Fig. 6. Our largest ribbon shaped hepatic in Virginia. Note the liver-like markings on the upper surface

seen the light green or whitish peat mosses growing in springy places or in bogs. While the peat mosses are not very abundant here, they do produce rather extensive growths in suitable areas all over the State. The true mosses are so abundant that they are the only ones usually noticed by those unfamiliar with the group. Mosses can be separated from hepatics in most instances because the stems of the independent moss generation are densely clothed with leaves. There are two main groups of hepatics, those where the independent generation is leafy-stemmed (Fig. 3), and those that appear as branched green ribbons (Figs. 4 and 6). The leafy hepatics usually can be distinguished from the mosses because their leaves form an overlapping scale-like row on each side of the stem. Their leaves also may be variously notched, lobed and folded, while moss leaves are nearly always of a simple outline.

The name hepatic comes from the Latin word for liver and is an allusion to the similarity of the surface markings of a common species to that of the liver (Fig. 6.) In a pre-scientific age this hepatic was used for this reason as a treatment for liver disorders although today no known bryophyte is of medicinal value. The common name, liverwort had been adopted for the same reason. "Wort" is an Anglo-Saxon word meaning "plant"; thus liverwort means, actually, liver plant.

The sizes of bryophytes differ a great deal. While average sized plants run from a half to one or two inches in length, some mosses may be as small as a twenty-fifth of an inch, or again, over a foot. Most leafy liverworts are rather slender, but a number of the ribbon shaped hepatics are conspicuous with widths up to a quarter to a half inch or more. Since bryophytes grow in colonies of many tufted or entangled individuals, even the smallest may be readily seen.

Some bryophytes are annuals and must grow anew each year from spores scattered during the previous season, but those commonly occurring in the forest are perennials; that is the leafy or sexual stage is perennial. The spore-producing generation is always of brief duration, persisting, at the most, for about a year. The clumps and sods of mosses seen in a deep forest are

often of a great age, ever growing above, while decay prunes them from below.

Bryophytes are interesting in the way they have become adjusted to different situations. One little moss, for instance, is nearly always found in decayed knotholes on trees. Other species grow only on the bark of trees. Some grow on rock that must be limestone, while others shun limestone and limit themselves to sandstone or granite. Some become well established on dry, barren sites; others limit themselves to places that never become dry for long. Some forms float on the surface of ponds; others prefer the streams that trout would like, fastening themselves to stones and swirling gaily in the current.

Certain of our species have developed even more curious habits. One of these grows only in towns or other places inhabited by man and does not venture off alone into the forest. One strange little misfit seems to be completely sexless and propagates itself by little green granules budded off of its leaves. Others have all of the normal propagative equipment but reproduce themselves regularly by little leaf fragments which regenerate new plants. Another one has virtually no leafy plant at all but the spore producing stage, a massive upright nearly an inch high, grows off of a green stain of filaments on the soil. Most mosses shed their spores to the air in a calm and orderly way, but the peat mosses literally "blow their tops" in violent explosions for so small an object as a capsule. As the opossum has a pouch to nourish and protect its young, so some liverworts envelope the spore bearing generation in deep pockets of maternal tissue.

A common feature of many bryophytes is their ability to pass through drought periods in a shrunken and shrivelled state of suspended animation. When moistened again, they freshen up with amazing speed and burst forth in all of their green glory none the worse for their arid suspension of existence. They are like Rip Van Winkle who awoke, surprised to learn that time had passed. In fact, in one instance a moss that had



been kept dry in a cabinet for fifteen years grew again after being wetted.

Aside from the intrinsic beauty and interest bryophytes hold for us, we might ask if they are of any use; do they play any role in nature? Yes, they assist in the first stages of soil formation in sandy and rocky places. As a result of the decay of the older parts under the mats, humus and soil are collected and held in place. Bogs become filled with the accumulated humus of centuries resulting eventually in dry land. Again, mosses grow on the barren soil of banks and fields and break the impact of rain drops and retard the scattering and erosion of soil particles. More especially, extensive moss mats soak up hard downpours and allow the water to seep slowly into the soil thus reducing run off. When the mats dry out, they act as an insulating mulch retarding evaporation from the soil surface. Moss beds often act as seed beds. Ferns and seeds of many kinds of plants grow freely in moss mats. The moss soaks up water during a rain and acts as a wet sponge, keeping the seeds and young plants damp during drier periods.

Practically, mosses have a limited commercial use. They are often used as packing material where their resilient, wiry stems make good shock absorbers. Peat moss, which is exceptionally porous, can absorb and retain large quantities of water, and is used for moist packing around the roots of nursery plants when shipped to the buyers. Peat mosses are dried and baled and sold for use as mulch on garden soils where they lighten heavy soils and add to the water holding ability of light sandy soils. Prehistoric growths of peat mosses known simply as peat are excavated, dried and used as fuel in certain parts of the world, notably Ireland. Because of the scarcity of cotton during the war of 1914-1918 fresh peat moss was successfully substituted in the preparation of gauze bandages.

Some people use mosses as decoration or actually grow them about their homes. They are used to cover the soil on pots or in other floral displays to good effect. They may be used to advantage since they may be repeatedly wetted after drying and they freshen up readily without damage for long periods of time. A few people transplant mosses to yards and rock gardens. This can be successfully done only when one transplants the moss to a site that is very similar to the one it was originally occupying.

As one would expect, many of the bryophytes in Virginia are widely distributed over the eastern part of North America and are common in many other states. The student of a regional flora fixes his attention on those species that are unusual for one reason or another. It is interesting to note that we have a rather large number of species common to our northeastern states and Canada, a few of which are not known to occur for hundreds of miles of intervening territory. The most logical explanation would be that when the great ice sheets pushed vegetation southward during the last Ice Age, Virginia was inhabited by an arctic flora. As the ice retreated the cold loving plants migrated northward and some found our more elevated areas a suitable

place to stay. This, then, is a rather good explanation for finding Canadian plants in Virginia. There is good evidence that there has been, prior to the recent Ice Age, a period of semi-tropical climate as far north as the Arctic Circle. During this early period, tropical plants migrated very far north and as the climate cooled with the centuries, some returned southward. Other tropical species became adapted to our climate and remained. Such an explanation is oversimplified, but the fact remains that there are such species in our southern Appalachians, several of which occupy no intervening territory between our mountains and the West Indies and Mexico.

It would be interesting to know how many species of bryophytes occur in this state. While all of the more common ones are well known, as well as a number of the rarer ones, no doubt quite a few are yet to be discovered. The gap between those known to be present and the number that actually occur in the State is probably not very large; there are undoubtedly a number of real surprises yet in store as there have been in the past. Although some effort has recently been devoted to this problem, there has been a long line of scattered local studies on Virginia bryophytes beginning with the collections of John Clayton which were identified and published by John Frederick Gronovius in his two editions of the *Flora Virginica* published in 1739 and 1762, but more especially to those of the last fifty years. Currently, 486 species of bryophytes are known here and we may divide them into the following groups:

Hepatics	
Ribbon-shaped forms . . . . .	34
Leafy liverworts . . . . .	97
Mosses	
Peat mosses . . . . .	23
All other mosses . . . . .	332

The small green finery we call bryophytes appears rather uniform to the casual observer. He claims that the different kinds or species look alike to him. But if he pays closer attention, he sees that in many instances they represent in miniature forms and shapes as distinctive as are our garden plants such as lilies, irises and chrysanthemums. To those who love variety of form in the miniature, bryophytes are unexcelled.

Those that become interested in the bryophytes will find membership in The American Bryological Society, a national Society, to their advantage. Its membership of over 400 is devoted to the study of these plants. This Society publishes a scholarly quarterly journal called the BRYOLOGIST. Anyone may join it on his own bid merely by sending annual dues and subscription of \$3.50 to Dr. Winona H. Welch, Secretary-Treasurer, Department of Botany, DePauw University, Greencastle, Indiana. If you enjoy working with bryophytes, this is congenial and stimulating company no matter how amateurish you may be.

The next time you are in the forest, take a closer look at the bryophytes. You will enjoy them for what they are and your effort will be repaid many times by the new world of interest and pleasure they offer.



## LEOPARD HUNT

*Continued from page 9*

the dog, or what, but the terrifying screams that shattered the air made us think they would leap right onto our backs. They kept moving about, growling and carrying on like tigers in a cage. The tension and fear mounted so high in our blind that I didn't know how long we could last. Suddenly, when a big leopard roared out of the night less than a dozen yards away, Doc snapped on the search-light, but it was in the wrong direction. He flashed the light toward the dog—but there was no dog. Terror seized me! Seconds later a pair of eyes flashed like candle points in a dark room, and only 25 yards away. I was sure it was a parent leopard, but he moved too quickly for a shot. Hands quivering, heart pounding, I made ready for a shot, since it was my turn to shoot. Doc flashed his light now, back and forth, farther away among the rocks where the growls were coming from and there in plain view, two full-grown leopards cowered on a large boulder. It was a difficult shot in the dark. Carefully I took aim and fired at the bigger cat. At the crack of the gun, he fell off the rock in the direction away from us.

"You got him," shrieked Doc and Tex. "Yes, you got him, I know you got him!" But in the darkness we could not see what happened. The other leopard bounded off in one leap. Such a leap I've never seen from an animal.

It was natural for us to want to go to the ledge and investigate, but the shikari warned us not to go in search of the leopard, as it was too dangerous. After much discussion, we decided to leave the machan and go back to Hyderabad, get some coffee, and return in the morning after daylight.

With the shikari leading the way, we deserted the machan and in a tightly-knit group walked the 400 yards to our vehicles, the helper dragging the cub leopard behind us all the way. We loaded the cub in the one car and took off for Hyderabad.

Half way back to the city, and in the dead of the night, we ran out of gas. Stranded, we waited and waited, hoping for someone to come by, but no one came. Finally, well after midnight, a village truck loomed into view. We hailed the driver down and bargained for some gas. But he refused, saying he barely had enough to get himself home. Several hours later, a car came along and this time we were successful in buying half a gallon of gas—just enough to get us into town. But we paid handsomely for it. After having coffee, and filling up with more gas, we started back.

Back in our hunting territory at dawn, we ran into another excited villager. He said a big leopard had mauled one of his buffaloes and he was terribly afraid. He begged us to hunt the animal down. The attack apparently came during the few hours that we were away and the news was not so welcome to us. We consoled the poor man the best we could, then disembarked from the car and took off for our machan.

It was full daylight when we dared venture to the rocks. Guns ready, we edged carefully around the

caves, inspecting every hole and every hiding place. But to go inside among the rocks and suddenly meet a wounded leopard would be suicide. The shikari poked around here and there, advancing a little closer to the rocks than the rest of us, but his legs were trembling badly. Now and then he would jump back a little, obviously showing a great respect for any lurking beasts.

"No, sahib," he finally cautioned, "it's no use. Panther bad. He kill us all if we go in."

Just then a growl came from one of the hidden caves above and we all moved back. That was signal enough to stay clear or become another Carl Akeley. Recalling that the better part of valor is discretion, we moved cautiously back to our machan.

I hated leaving that panther country never knowing just what happened. I felt sure I was leaving a prize leopard. But when Tex himself suggested getting away, I knew there was reason behind our decision.

When we safely boarded the station wagon and began turning around on our way back to Hyderabad, Tex regained his courage and poked me in the ribs with his elbow. "You know," he said, "I'd gone into the place after that critter and lassoed him only I forgot to bring my rope."

No one said anything but the rest of us grimaced. Then, as if to help us out, the truck hopped over a rock and came down with a solid bump. To a man we each let out a big UGH!

## BLACK BEAR

*Continued from page 17*

from year to year. This kill pattern seems to follow the lean and abundant bear food years. When mast crops of acorns, nuts, greenbrier and wild grapes are scarce

**Bear Kill in Virginia—1946 Through 1951**

COUNTY	1946	1947	1948	1949	1950	1951
Albemarle . . .	..	..	..	1	..	..
Alleghany . . .	1	17	18	11	29	12
Amherst . . .	7	13	5	7	6	6
Augusta . . .	20	34	30	39	66	30
Bath . . .	12	13	21	31	25	25
Bedford . . .	..	5	3	1	1	2
Bland . . .	..	3	..	..	2	5
Botetourt . . .	..	12	7	1	38	3
Buchanan . . .	..	..	..	..	1	..
Craig . . .	..	..	..	1	1	1
Highland . . .	1	..	7	8	9	11
Nansemond . . .	..	3	10	..	7	4
Nelson . . .	2	13	9	10	9	10
Norfolk . . .	..	4	2	2	1	7
Page . . .	3	3	2	5	11	1
Rockbridge . . .	5	28	11	12	42	15
Rockingham . . .	11	15	24	21	56	14
Shenandoah . . .	..	1	2	2	2	..
Smyth . . .	..	..	..	..	..	2
Sussex . . .	..	..	..	..	1	..
Tazewell . . .	..	..	..	..	1	..
Wythe . . .	..	..	1	..	2	..
TOTALS . . .	62	164	152	152	310	148

in Virginia's mountains, the bears den up early or move out of the mountains in search of food.

Bear kill records for the last six years show 1950 as an

*Continued on page 23*



# Conservation education and the ANNUAL WILDLIFE ESSAY CONTEST

By ROBERT R. BOWERS

TODAY resource conservation and appreciation is being taught to some 10,000 students in 400 Virginia schools where the subject was all but unheard of six years ago before the advent of the Annual Wildlife Essay Contest.

For six straight years now students and teachers have taken part in learning conservation by reading and writing it, thereby being exposed to wise-use principles and practices. Although the annual contest is referred to as the Wildlife Essay Contest, it is actually a natural resources contest, including all of the resources upon which humans and wildlife depend. It does not deal separately with wildlife for it is just as important that we conserve the land and the woods and the waters from which the wildlife is a by-product. It is paramount that students and teachers understand thoroughly that the abundance of wildlife is solely dependent upon the treatment of lands, woods and waters.

The objectives of the contest are the stimulation of thought and consciousness in the minds of students and teachers of the importance of wildlife and related resources; to help youth to appreciate the need for their conservation; to point out how all natural resources are related, one to the other; and to make them aware that resource-use is tied into our social structure, welfare, democratic ways and future existence.

This annual event is co-operatively sponsored by the Commission of Game and Inland Fisheries and the Virginia Division of the Izaak Walton League of America. When it was initiated six years ago it was hoped that a way had been found to bring conservation into the public school system, a way of reaching children year after year, generation after generation. It was hoped that as each generation grew up and went into farming, business and other fields they would carry with them an appreciation of the meaning of conservation, and, perhaps pass it on to those around them.

Admittedly, the complete hope of the contest was idealistic. But after successfully passing the test of suitability for the schools the project is showing good results. The acid test being public acceptance or more specifically, teacher acceptance. This has been accomplished.

Acceptance came slowly at first for curricula were overcrowded and other organizations, national, state and local, were also sponsoring essay contests. Usually the prizes in these contests dwarfed our meager offerings as an incentive. Fortunately, however, most competing contests were not annual events and once the wildlife essay contest caught on in the classroom it held its own to grow with each passing year.

Teacher acceptance can be shown by a comparative study of the entries in the last two years. Last year the essay contest took firm hold and catapulted from 160 entered schools in 1950-51 to 300 last spring. School entries came from 94 of Virginia's 100 counties. This year it is hoped that 400 schools will enter the Sixth Wildlife Essay Contest, which ends this February on the 15th. Also, a 100 percent county entrance is predicted.

Thus, we have achieved length and breadth in the contest and a well distributed representation. We are striving for depth—more schools per county. This should be forthcoming.

The far-reaching effects of the contest are already being felt. Not only are students, teachers, and even parents requesting more information about wildlife and its related resources, but dozens of schools have voluntarily started conservation projects in the classroom—something unheard of some six years ago when the first wildlife essay contest was announced.

The immediate goal of getting the contest into the classroom has been reached. But what about the long-range objective? *The overall objective, of course, is centered upon better living and a greater appreciation by all people of our God-given resources.* To do this the wildlife essay contest must reach into the home through the student and must grow until every student in Virginia is exposed to the opportunity of entering.

Contests by themselves have limitations. It is doubtful whether even so effectual a project as the essay contest can ever reach every student, every parent, every teacher. Big as it is, it is not nearly big enough for



For six straight years students have been learning conservation by reading and writing it





Each year grand prize winners are presented with their awards by the Governor

every teacher. Big as it is, it is not near big enough for all universal interest and appeal. Other efforts must be made to supplement the contest.

There is other hope, and it will take time. Work with schools, as we are doing, can continue and can succeed in bringing some conservation education to those concerned. Yet, until the day comes when conservation training becomes a part of the classroom program, we cannot hope to fulfill the ultimate goal of a 100 percent conservation-minded public.

With objectives of such wide scope, the present educational projects such as the essay contest and similar

devices, are at best "stop gap" projects. It is the teachers, therefore, and the teachers only who can most effectively emphasize the rich lessons of conservation to the youth of our State. Anything done along these lines by any organization other than the public school system, can only plant the seed and perhaps nourish these concepts along to some degree. Present efforts are only to stem the tide in the immediate conservation problems, not to check them completely; to create in the minds of our youngsters a conservation ideal, not to make game managers out of them.

To succeed, any over-all educational program must have the backing and co-operation of all concerned. In this respect, the Virginia Commission of Game and Inland Fisheries is fortunate. Schools and teachers, sportsman clubs, civic clubs, and numbers of women's clubs have joined with the Commission and Izaak Walton League and have pushed conservation education so that many school and club conservation projects have been begun throughout the State. More parents, teachers, and students alike are becoming interested in wildlife and its problems. They are beginning to notice devastated forests, eroded hills, muddy streams. They want to know why these things happen, and, what they can do to help combat them. This is a healthy sign. While participation in these projects is not as great as it could be, there remains a big job ahead. But a start has been made—and a foundation laid upon which we can build a better, well-rounded conservation-conscious Virginia.

## THE BLACK BEAR

*Continued from page 21*

exceptionally good year for bear hunters. During the legal season that year a total of 310 bear were taken in Virginia. In that year, food conditions in the forest were excellent. Bear foods were abundant. The following year, few oak and other nut trees bore a crop and food was scarce. Accordingly, the bear kill dropped. Also during the fall of 1951 when bear foods were scarce there was a definite movement of bear out of the mountains. Numerous bear were killed by landowners in the valley areas next to the mountains. These animals were in search of food and were shot damaging crops or property. A 30-pound cub bear was captured near the town of Dayton in the fall of 1951. It is believed the mother bear was shot a few days earlier by some landowner. The most startling example of the movement of bear for food during that lean year occurred when a 265-pound bear was discovered in the middle of the city of Harrisonburg, which has a population of over 12,000. This bruin was discovered during the early morning hours not more than a block from the courthouse when it was shot by police officers. During that same period several bears were seen on farmland near Madison College.

The black bear produces young, usually one to four, during the months of January and February. The female dens up and has her young in solitude. Young bear cubs are tiny at birth—weighing from one-half to three-quarters of a pound and measure about six to

nine inches in length. These cubs grow rapidly, remaining with the mother until the second summer. The mating season for bear is late June and early July. Adult bears are about three years old before they are sexually mature. Cub bear of 10 months of age should average about 55 pounds in weight; yearlings about 100 pounds; 2-year olds about 155 pounds; 3-year olds about 205 pounds; 4-year olds about 255 pounds; 5-year olds about 305 pounds and older animals up to 600 pounds. These figures were determined in a study made in Pennsylvania; however, the figures can be applied in Virginia.

The total population of black bear in the Old Dominion for the year 1952 has been estimated at 650 to 750 animals. The majority of these bears are found on the mountain lands of the George Washington and Thomas Jefferson national forests.

Several states have set weight limits on the size of bear that can be taken by a hunter. Often the law will make it unlawful to kill one weighing less than 100 pounds. This law is designed to protect the cub and yearling bear from excessive shooting, to assure the future of bear hunting, but violations are common.

The black bear in Virginia has taken a lot of punishment from man and his way of life. Although well established over much of mountainous Virginia, the black bear will continue to remain a prize for the big game hunter only with foresight and wise management.



# It's time to PLAN FOR PLANTING NOW!

By CHESTER F. PHELPS

*Chief, Game Division*

*Commission photo by Kesteloo*

AS IS THE case with other farm crops, plantings to be made for the benefit of wildlife must be planned in advance for best results. While the seed for most crops can be purchased on the open market, such is not the case with the most popular game food—bicolor lespedeza. Seed and plants are ordinarily difficult to locate but the early applicant may secure any reasonable amount without charge from the Commission of Game and Inland Fisheries.

Most farmers and sportsmen are already familiar with bicolor. This bushy, perennial lespedeza offers much to the landowner from the standpoint of erosion control and benefits to farm game. Plantings of bicolor ordinarily take the form of strips on the edges of fields next to cover or in odd corners and waste areas to be found on every farm. Bicolor does not spread and requires maintenance only in the form of cutting back every few years and fertilizing as indicated by growth conditions. It is a soil-improving legume that grows well in shade or on poor soil. It is not suitable for wet lands. The heavy crop of seed which is usually produced the second year after planting is a preferred food of quail. Rabbits will eat the bark (with no harm to the plant) and its tall, upright growth habit often provides the only available food for both quail and rabbits during periods of deep snow. The usual one-eighth acre planting, a strip 15 feet wide and 400 feet long will produce seed enough for an entire covey of 8 or 10 quail during the year.

Borders or plantings may be established from either seed or plants. Both are available from the Game Commission. Special early-ripening varieties have been developed for the colder and higher sections of the State where frost can be expected early in autumn. The establishment of a border from seed usually requires less labor but considerably more care in soil preparation and seeding. Best results are obtained from thoroughly worked soil sowed in rows with a small hand-operated planter. Borders resulting from seed may need less maintenance but require two years to produce a full crop of seed. Plants, a thousand per border, are usually spaced in a furrow and covered by the plow. Borders of this type may be expected to produce some seed the first year. For those who want a quick source of wild-



life food, the Game Commission offers a mixture of annuals. While only temporary, annuals can provide immediate food while the slower bicolor becomes fully productive. *Sericea lespedeza*, in limited quantities, is also available and serves best when used in conjunction with bicolor. *Sericea* seed is not readily taken by quail but the plant has much value as nesting cover and food for rabbits.

For those interested in doing the most for farm game the Commission provides not only planting material but the advice and assistance of trained wildlife technicians. Publications thoroughly explaining the planning and planting of food and cover strips and a booklet giving details of the farm game program are available for the asking. Through the co-operation of the local Soil Conservation Districts, technicians are available to supplement those of the Commission in not only planning for wildlife but in the development of a complete farm plan for the conservation of all farm resources.

For those wanting to know more about planting materials, the following is available for distribution:  
*Shrub lespedeza plants:* This perennial shrub is best suited as a woodland border and will furnish abundant seed as well as cover for quail.

*Shrub lespedeza seed:* A limited quantity of seed is available for distribution. Provides an efficient method of establishing a wildlife border but requires a well prepared seed bed and very careful seeding to be successful.

*Sericea lespedeza:* Planted as a border along edges of fields next to woodlands alone or in combination with shrub lespedeza.

*Wildlife mixture:* A mixture of beneficial annual seed which is eaten readily by quail, turkey and deer.

*Milo maize:* An annual plant similar to sorghum which produces a heavy crop of seed which is utilized by quail, wild turkey, rabbits and deer.

Judging from the results of past seasons the available supply of seeds and plants, particularly bicolor lespedeza, will not supply the demand. For this reason and because of distribution problems requests for planting material made after early February may not be filled. Orders should be given at once to your Soil Conservationist, game warden or district game technician.





### COMMISSION BEGINS FIRST LARGE SCALE DEER-AGING PROGRAM

Hunters were confronted with a new twist in game management during the past hunting season. Not only were they required to check all deer kills at local checking stations but were also requested to send the jaw of the deer to the Commission for aging purposes.



Game technician, Lem Richards, shown using the deer aging board to determine age of freshly killed deer. Pete Hanlon (Right), U.S.F.S., and an interested hunter look on.

Game technicians were engaged in the meantime, weighing and aging deer as they were brought into the checking stations. The work was primarily confined to Bath and Shenandoah Counties in the west and to the vicinity of the Dismal Swamp in the east.

In these areas the deer herds have become quite sizable and information gathered in this study should aid the Commission in determining whether or not the deer are too plentiful for the range foods to support. It should also aid in determining the age composition as well as the condition of the herds. Antler development in some sections was found to be poor, indicating too many deer for the food available.

### ILLEGAL DEER KILL COSTS SIX NIMRODS \$835.75

An illegal deer hunting expedition on the night of November 10-11 proved expensive to six Frederick County men. After hearing testimony for more than a day, Trial Justice W. E. Edwards handed down fines and court costs amounting to \$835.75.

The men were arrested at varying hours throughout the night, according to Game Warden Earl Cather. Arrests were made by Wardens Cather, James Simpson, Warren County; John Wert, Clarke County, and Conservation Officer Fred Hottle, Edinburg. In addition, two deer were confiscated along with a 1940 Ford sedan, two 30-30 rifles, and a 32 calibre rifle. All of the men were from the Green Spring section of Frederick County.

Names of the men, charges and the resulting fines are as follows: Walter Saville: Hunting without a license, \$10 fine and costs of \$6.75; hunting deer during closed season, November 10 and 11, \$50.00 fine and costs of \$13.50.

Rom Smeltzer: Hunting without a license, \$10 fine and costs of \$6.75; hunting deer during closed season, November 10 and 11, \$50.00 fine, and costs of \$13.50; hunting deer at night on November 10 and 11, \$50.00 and costs of \$13.50.

Robert Smeltzer, Jr.: Hunting without a license, fine of \$10 and costs, \$6.75; hunting deer during closed season on November 10 and 11, fine of \$50.00 and costs of \$13.50; hunting deer at night on November 10 and 11, \$50.00 fine and costs of \$13.50.

James Thompson: Hunting without a license, fine of \$10 and costs of \$6.75; hunting deer during closed season, November 10 and 11, fine of \$40 and costs of \$13.50; hunting deer at night on November 10 and 11, fine of \$50.00 and costs of \$13.50; illegal possession of deer meat, \$10 and costs

of \$6.75. Thompson was also given a 30-day suspended jail sentence on each charge of hunting at night.

Carl Milburn: Hunting deer during the closed season on November 10 and 11, \$50.00 fine and \$13.50 costs; hunting deer at night on November 10 and 11, \$50.00 fine and costs of \$13.50 plus a 30-day suspended jail sentence.

Oliver Taylor: Hunting deer during the closed season on November 10 and 11, fine of \$50.00 and costs of \$13.50; hunting deer at night on November 10 and 11, \$50.00 fine and \$13.50 costs.

The total fines on all counts amounted to \$640, plus costs of \$195.75, bringing the grand total to \$835.75. Double charges in the above incidents resulted from their hunting on two separate days.

### WARDEN HAMPTON AND HIS JUG

Warden Walter Hampton, of Grayson County, is developing his archaeological interests! This Indian jug was found by his father about 20 years ago and is a prized relic of the Hampton family.

The jug was discovered near the junction of the Little and New rivers in a partly eroded thicket and is made of clay, very thin and without design.



Warden Hampton shown with prize Indian jug relic





## NEW SECRETARY OF THE INTERIOR TO ADDRESS WILDLIFE CONFERENCE

Governor Douglas McKay of Oregon, new Secretary of the Interior under President Eisenhower, has agreed to serve as a featured speaker on the program of the opening general session of the 18th North American Wildlife Conference, which will convene in the nation's capitol on March 9-11 under the auspices of the Wildlife Management Institute.

Governor McKay approaches his new office with a strong background of interest and achievement in the field of natural resource administration in his home State. Those attending the Conference will have an excellent opportunity to become acquainted with the views of the man who, for the next four or more years, will have charge of national programs affecting public lands, migratory waterfowl, and related natural resources.

## NO HANDICAP HERE!

R. C. Burton, pictured here, is a one-armed sportsman of Suffolk who doesn't let his handicap interfere with his hunting.

Burton was a railroader until an accident in 1934 when he lost his arm



R. C. Burton, of Suffolk, displays his gun handling ability despite his "so-called" handicap

in a peanut picker. Now he makes a business of his former hobby of bird dog training and when it comes to handling a 16-gauge automatic or double-barrel, he's a crack shot.

## WILDLIFE WEEK DEDICATED TO PRAIRIE CHICKEN

Claude D. Kelley, president of the National Wildlife Federation, Washington, D. C., announces that National Wildlife Week for 1953 will be dedicated to saving the disappearing prairie chicken species.

Wildlife Week, the sixteenth in the series of such observances, will be March 15-21.

A highly successful program early in 1952 was devoted to the Florida Key Deer. As a result of the interest aroused in this miniature species of whitetail deer, the National Wildlife Federation was able to continue the services of a warden in the Florida Keys as well as establish a program which will help keep the deer in existence.

Carl D. Shoemaker, retiring conservation director for the Federation, said the prairie chicken fate is nearly as typical as the Key Deer.

"While not yet threatened by immediate extinction, as was the Key Deer," he said, "the grouse of the grasslands is in precarious circumstances. It needs special attention if it is not to pass eventually from the scene."

## SCHOOL ADMINISTRATORS GROUP RECEIVES NATIONAL CERTIFICATE AWARD

The American Association of School Administrators, with headquarters in Washington, D. C., received special recognition last November 17th for its book, "Conservation Education in American Schools," a publication which was recognized by the National

Association of Conservation Education and Publicity as the most outstanding literary effort on conservation in 1951.

J. J. Shomon, chief of the education division of the Virginia Game Commission and representing the NACEP, presented a specially engraved awards certificate to the Association in Washington. Mr. Worth McClure, executive secretary, made the acceptance.



Worth McClure (Right), shown accepting NACEP award from J. J. Shomon, who made presentation in behalf of the Association

Said Mr. Shomon, "In behalf of the National Association of Conservation Education and Publicity, it is a great pleasure for me to present to the American Association of School Administrators this awards certificate in recognition of the outstanding contribution that the Association has made to the field of conservation through the compilation of the book 'Conservation Education in American Schools.'"

The book which took the award is a 527-page administrators' guide which defines the broad area of school responsibility in conservation education and what can be done about it. Challenges, guides, practices, materials and facilities are outlined in ways which should be helpful to school administrators in expanding and improving school programs of conservation education.



# Wildlife Questions and Answers

**Ques:** How many different types of doves do we have in Virginia?

**Ans.:** Virginia has only one dove representative, the mourning dove. The passenger pigeon, once so abundant and now extinct, belonged to this group.

**Ques.:** Which of our Virginia birds is referred to as the "rain crow"?

**Ans.:** The cuckoo. It seems that this bird becomes exceptionally vocal just before a rain.

**Ques.:** I have heard that the bobwhite quail not only provides good shooting for hunters, but also is a friend to the farmer. I can understand about the good shooting angle, but how is the quail a friend to the farmer?

**Ans.:** The quail is perhaps the greatest weed destroyer of all our game birds. The Virginia bobwhite eats almost an ounce of weed seeds a day. On this basis our estimated 3,000,000 quail in Virginia would destroy tons and tons of weed seeds each year, plus tons of insects.

**Ques.:** Why are there so many eight- and nine-inch bass being caught at Claytor Lake?

**Ans.:** At the present time the fish population of Claytor Lake is dominated by large numbers of walleye pike which are keeping the numbers of larger bass low by predation and competition for the same food supply. This cycle may be partially reversed in the event of successive spawning failures of the walleye, which would allow the bass to assume the dominant role. Recent studies indicate that the bass population is on the up swing, and barring another abnormally successful spawning season for the walleye, bass fishing should be considerably improved next year.

**Ques.:** What happens to bullfrogs in winter?

**Ans.:** The activity of the bullfrog diminishes as the water cools in the early fall. By winter the bullfrog has almost ceased to feed and may be found in the mud at the bottom of ponds or slow streams where he spends the winter in almost total hibernation.

**Ques:** What happened to the sport of falconry?

**Ans.:** As hunting with firearms increased the ancient sport of taking game with falcons or hawks declined, but it is still practiced in Asia. In recent years, falconry has grown in popularity in America and is beginning to be recognized as a true sport.

**Ques.:** Why is there such good fishing in our new large impoundments for the first three or four years?

**Ans.:** Two factors are chiefly responsible for the good fishing enjoyed in the early years of impoundment: (1) the release of nutrients from the decomposition of plant materials and the immediate leaching of the newly inundated soil results in an abundant food supply and subsequent high reproduction and fast growth by sport fishes; (2) the size

distribution of the fast growing fishes is such that most of the population is of "fishable size."

**Ques.:** Someone has said that certain fresh water fish have a poisonous bite. If so, are they found in any Virginia fresh waters?

**Ans.:** None of the popular sport fishes are capable of inflicting a poisonous wound. All catfishes possess sharp spines which are often used to inflict painful wounds. Some smaller members of the catfish family which inhabit the smaller faster streams of the state do possess a poison gland at the base of the pectoral spine. These are the madtoms and the stonecats.

**Ques.:** I am interested in encouraging song-birds around my house, but there are two cats which harass the birds every time they



"This way I can take a nap and fish at the same time"

land in my trees. What can be done to prevent these cats from bothering the birds?

**Ans.:** Of course, you could eliminate the cats, but tree guards would probably cause less trouble with your neighbors. Tree guards made of sheet metal shaped like funnels should be placed at least six feet above the ground on all poles bearing bird shelters or on trees harboring nesting birds.

**Ques.:** What is the gestation period of the white-tailed deer?

**Ans.:** 205 to 212 days.

**Ques.:** What is the largest animal that ever lived?

**Ans.:** The blue whale, and it is still living. The giant dinosaurs were enormous but the blue whale dwarfs them. Specimens have been caught measuring well over 100 feet and weighing over 100 tons.

**Ques.:** Are there about the same number of males and females in the animal world?

**Ans.:** Almost, especially with vertebrate animals. Of course there is local variation in the sex proportion, but overall it would seem that most of our larger animals do reproduce in approximately the same sex ratio. The dog, our common greyhound, shows the broadest disproportion of the sexes. For every 100 females born, the males number 110.

**Ques.:** What is the object of bird banding?

**Ans.:** The object of bird banding is to learn more of the migration habits of birds, nesting conditions, age, general bird movements, and longevity of birds.

**Ques.:** Do people really eat some bird nests?

**Ans.:** Yes, some people do eat birds' nests, but not the nests of any Virginia birds. They eat the nest of the salangane, a species of swift, found in the Malaya Archipelago, and considered to be a delicacy by the Chinese. The nest is almost entirely of a gelatinous secretion.

**Ques.:** Every year robins and other songbirds do damage to my cherry crop and I would like to get rid of them. Can I legally kill these birds that are doing the damage?

**Ans.:** The State Department of Agriculture should be contacted in cases of damage to crops by these birds, as well as the U. S. Department of the Interior, Fish and Wildlife Service, in Washington, D. C. A permit to kill certain migratory birds is required.

**Ques.:** What good is a vulture or buzzard?

**Ans.:** This bird is the sanitary engineer of the wild. It feeds on dead and decaying materials, keeping the premises clean of smelling and unsightly carrion. Crows also serve such a purpose, only in a slightly lesser degree.

**Ques.:** Approximately how much food does our native bobwhite quail provide us with each year?

**Ans.:** In Virginia it is estimated that some 250,000 pounds of bobwhite quail are taken for food each year.

**Ques.:** What is the average height and weight of the white-tailed deer found in Virginia?

**Ans.:** Records on the white-tailed deer in Virginia are far from being complete. However, from a study made several years ago it was found that east of the Blue Ridge bucks averaged 140.4 pounds and stood an average of 36.4 inches high. West of the Blue Ridge bucks averaged 186 pounds and stood 33.3 inches high. It would seem that our eastern deer tend to be tall and lean, whereas, western deer tend to be short and stocky.

**Ques.:** How many deer were killed west of the Blue Ridge this past hunting season? What accounts for the increase?

**Ans.:** A final tally of deer kill returns from counties west of the Blue Ridge shows that Virginia hunters took 5,527 deer during the six-day season, 2,101 more than last year's record kill, C. F. Phelps, chief, Game Division of the Commission of Game and Inland Fisheries, reports.

Phelps gave three reasons for the phenomenal increase of kills in the one-year period. First of all, there were more deer to hunt; secondly, does were killed on the last day of the season in counties having an excess deer population; and there was an extension of the season this year.





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